

Is Quarantining Worth It?

By Martin Choinière, DVM



What exactly is quarantine?

Definition and concept

Quarantine is defined as a confinement period for humans, animals or plants during their movement to prevent the spread of infectious diseases to the new population in which they are introduced. Those subjected to quarantine are in theory healthy and the duration of the quarantine must correspond to the incubation period of the infectious agents covered by the quarantine.

Isolation is the confinement of subjects already infected by an infectious disease in order to prevent the spread to healthy subjects.

What exactly is quarantine?

A bit of history

The first quarantines appeared in the 14th century in Europe in the coastal region bordering the Adriatic Sea.

Spread to the rest of Europe in the 15th and 16th century, mainly to prevent the spread of the plague.



What exactly is quarantine?

A bit of history

In North America, in the 18th and 19th century, Ellis Island and Grosse Ile, to limit the introduction of diseases with the high influx of immigrants



What exactly is quarantine?

In pork production...

Quarantine has long been used when importing animals to Canada from other countries and is governed by the CFIA.



Post-entry import conditions

1. The animal(s) being presented for importation must be quarantined for a minimum of 30 days or a longer period of time, as necessary, to complete the tests required to meet the import conditions. The samples for required testing in post-import quarantine must be taken minimum 21 days after entering the post-import quarantine. The animals must be quarantined at the premises, previously approved for this purpose by a veterinary inspector designated under the Health of Animals Act, and specified on the permit.

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What exactly is quarantine?

Good online resource...

CDPQ website

<https://www.cdpq.ca/cdpq.ca/files/bc/bc7f7bd0-b4d4-4a75-9b54-68d36db2361d.pdf>

In commercial production, quarantine is the first part of the concept of introducing new breeding stock into the nursery, followed by acclimation and preparation for breeding.



Who really applies quarantine measures?

CDPQ biorisk audit, 2017 to 2019

307 sites with sows out of 500 sites in Quebec (61%)

- Q 06 Breeding animals that arrive at the rearing site are placed in quarantine in a building separate from the main herd:

Q06. Les animaux de reproductions qui arrivent sur le site d'élevage sont placés en quarantaine dans un bâtiment séparé du troupeau principal. (I-100 pts)				40	92 (31%)	43 (14%)	164 (55%)
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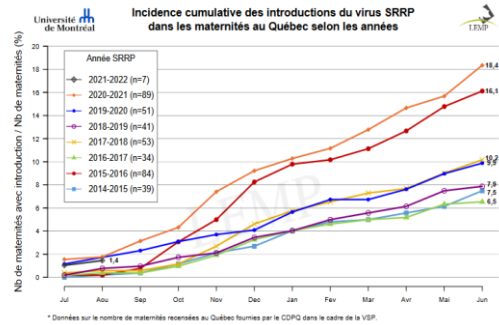
What's the point of quarantine?

FOR PRRS, and others...

- PRRS is the main pathogen negatively affecting Quebec pork production
- The majority of quarantines used in Quebec have the primary function of preventing contamination by the PRRS virus
- For the 2020-2021 reference year, based on data from the Laboratoire d'épidémiologie en médecine porcine from the Faculté de médecine vétérinaire de l'Université de Montréal (LEMP)...

What's the point of quarantine?

- **21% of 89 contaminations in nurseries in Quebec for the 2020-2021 reference year are attributed to contaminated animals**



What's the point of quarantine?

FOR PRRS, and others...

- The use of quarantine is not limited to preventing PRRS contamination, some other pathogens can also be easily controlled such as enzootic pneumonia and porcine epidemic diarrhea.
- Quarantine may also allow a “cooling” period for pathogens with a short-lived carriage period such as influenza.

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What's the point of quarantine?

Replacement animals from major genetics suppliers are subject to rigorous health sampling prior to putting on the market.

However, it is impossible to guarantee beyond a reasonable doubt the status of animals at the time of delivery, a **grey zone** is always present for the following reasons:



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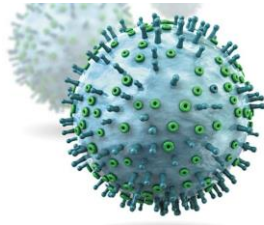
- Not all animals can be tested



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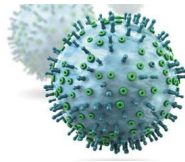
- The time between the infection of subjects and the test result



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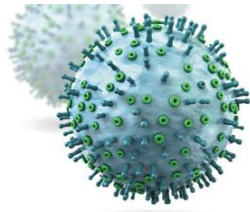
- Delay and contamination between testing and delivery



What's the point of quarantine?

However, it is impossible to guarantee beyond a reasonable doubt the status of animals at the time of delivery, a **grey zone** is always present for the following reasons:

- Contamination at the time of delivery



How does quarantine work?

3 main principles

- Isolate
- Observe
- Test



How does quarantine work?

Isolate

- Physically separate building
- Recommended distance: at least 100m
- Minimal presence of other pigs
- All-in-all-out management
- Disinfected washing of each lot
- Visit at the end of the day



How does quarantine work?

Observe

- Suggestive clinical signs
- Despondent and anorexic
- Fever
- Diarrhea



Observation alone is not enough!

How does quarantine work?

Test

- Antigen testing and/or antibody testing
- Samples: blood or oral fluids



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How does quarantine work?

Test

- The main test to detect antibodies against PRRS is the Elisa test, positive results appear about 10 to 14 days after contamination and persist for a long time.
- The main test to detect the PRRS virus antigen is the PCR test, positive results appear in 24 to 48 hours, but are shorter in duration.



How does quarantine work?

Test

- It takes a minimum of 7 to 10 days to effectively detect a transport infection via a PCR test
- The time elapsed allows you to reduce your sampling
- Waiting 21 days allows you to use an Elisa test
- Your sample must represent your population



IT IS IMPORTANT TO
REMEMBER THE GREY
ZONE!!!

How does quarantine work?

Test

- My method:
 - 8-week interval: PRRS Elisa at 21-28 days present
 - 4-week interval: PRRS Elisa and PRRS PCR at 10-14 days present

How does quarantine work?

Other small details

- Outbound transport to the nursery must be safe
- The presence of quarantine often allows for a higher delivery order
- Don't forget the boars



Does quarantine work?

A question for my colleagues...

To the best of your knowledge, have you experienced a situation where contaminated animals were introduced into a quarantine facility and contamination spread to the nursery without the animals being introduced into the nursery?

- None have experienced such a situation



Does quarantine work?

A few examples of success stories...

- Introduction of contaminated subjects to grey zone
- Blood sampling for PRRS antibodies (Elisa) 21 to 28 days post-introduction: positive results
- Quarantine reform
- No contamination in nursery



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How much does quarantine cost?

For a nursery of 1,600 sows introducing 100 gilts every 8 weeks:

- Turnkey contract
- 100-foot path
- 45 x 45 foot building
- Loading dock
- External deep pre-pit

- Estimated cost: \$346,000

How much does PRRS set you back?

The average cost of a PRRS contamination for a 1,600 sow production scheme including the effects on three production sites...

- About \$300 per sow for a farrow-finish model
- Approximately \$480,000
- Variable distribution between the different workshops, but approximately 40% for farrow-finish... \$192,000
- Significant human impact, but not calculated
- A strain such as American 1-4-4 could modify the impact calculation of a contamination

How much can quarantine generate?

Many factors to consider:

- Only a severe contamination from PRRS will make the investment in a farrow to finish model worth it.
- Other current and future pathogens should not be overlooked.
- It is possible to use the building for other purposes to reduce the cost.
- We also need to add the positive effect on the rotation of the herd.



Imperfect quarantine?

What if I can't meet all these standards?

- There is room for compromise...
- Litter
- Half-full, half-empty
- Duration



Is quarantine worth it?

Quarantine is an effective measure to prevent the introduction of targeted pathogens during regular stock renewal.

Quarantine is not a total guarantee against contaminations by the PRRS virus...

Talk to you veterinarian.

Is quarantine worth it?

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END

